

# Traditional Marquesan Agriculture and Subsistence: The Historical Evidence

## Part I of IV – General Descriptions, Garden Locations, the Agricultural Calendar, Hydrology and Soils, Cultigens, and Agricultural Techniques

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THE MARQUESAS ISLANDS (Figure 1) have long captivated the attention of social scientists. Members of the Bishop Museum's Bayard-Dominick Expedition did the first formal anthropological and archaeological research in the archipelago (Figure 2) in the early 20<sup>th</sup> century (e.g. E.S.C. Handy 1923, 1930; Handy and Winne 1925; W. C. Handy 1922, 1925, 1938; Linton 1923, 1925; Sullivan et al. 1923). But before these museum-based investigations, foreign visitors to the Marquesas had been writing down impressions of their observations for a century and a half. Sheahan (1955) was the first to attempt systematic utilization of these sources, and his untimely death prevented the completion of what promised to be an outstanding doctoral dissertation. Denning's (1971) doctoral dissertation drew heavily on this material in a masterful construction of social and political relationships surrounding Marquesan elites in the early historic period (see also Denning 1980). Thomas (1990) expanded on Denning's ideas, using historic material. Kirch (1991) subsequently proposed a sce-

nario for the prehistoric involution of Marquesan power structures.

While social and political structures and relationships have been dominant research topics, little attention has been paid to the descriptions of agriculture in the historic material. Not only did agriculture provide the basic living requirements of traditional Marquesan societies, it also supplied the surplus that was so important in funding social and political maneuvering.

Ferdon (1993) provides a synthesis of the early (pre-1814) sources arranged topically (including a section on agriculture). The following material covers a longer period, but also differs from Ferdon's work in that it is consciously non-synthetic, and generalizations have been kept to a minimum.

This four-part series contains passages drawn from the records of twenty-seven foreigners that visited or lived in the Marquesas over a period spanning more than a century and beginning in 1774 (the material from the Mendana Expedition is not included). The emphasis is on agriculture and

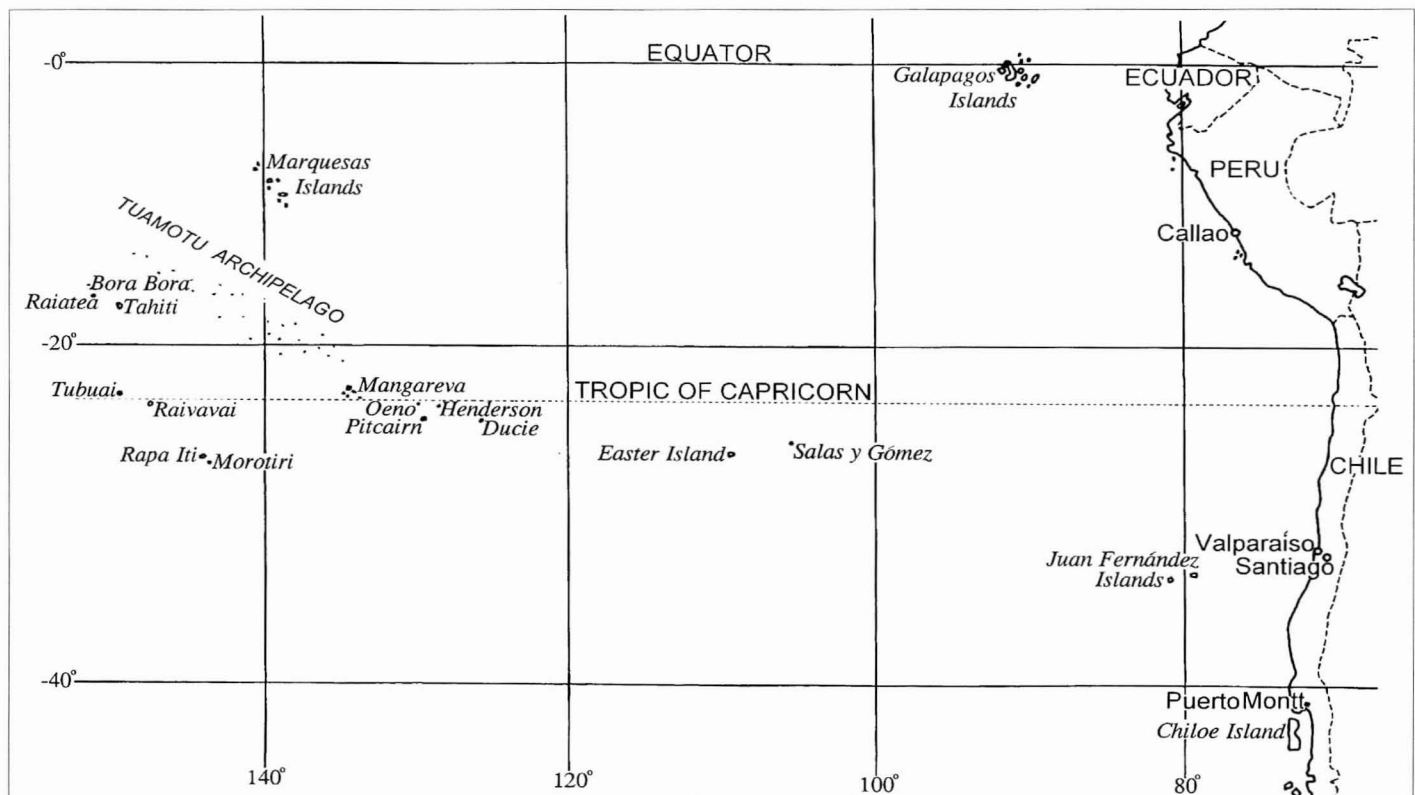


Figure 1. Location of the Marquesas Islands in the Pacific.

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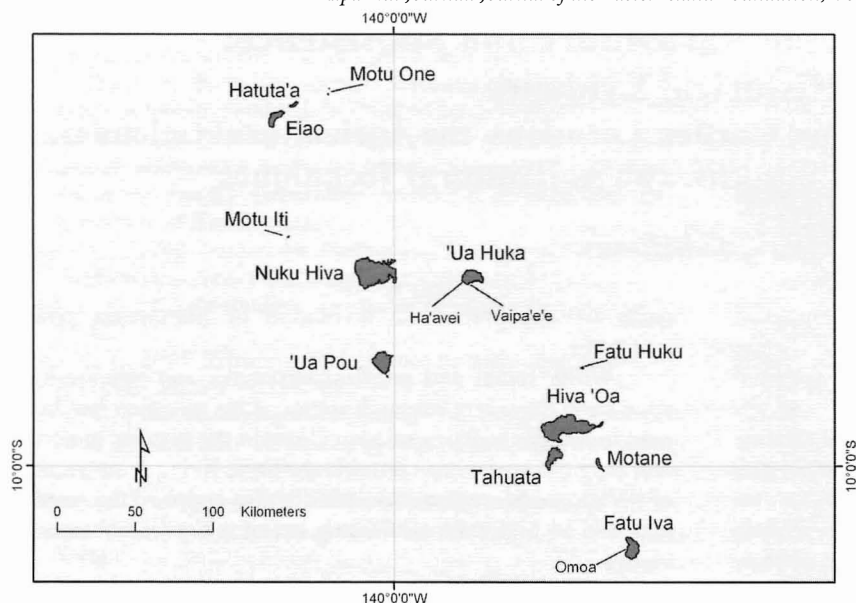


Figure 2. The Marquesas Islands archipelago.

plants, but I have tried to include other aspects of subsistence as well.

The sources are arranged by topic with some attempt at arrangement within topic by geographic area and date of observation. I have made an effort to specify as closely as possible the island or valley to which each description refers. A homogenous set of agricultural practices would have been impractical on arable land spread over six major island, each with numerous microenvironments, and some variation can be seen within the archipelago. (Figure 3) Temporally, the records treated here span a period of intensely rapid and dynamic cultural, economic, demographic, and societal change. This period saw the virtual demise of pre-European Marquesan society. There is evidence of change in agriculture in the Marquesas during this period. Past synthesis and generalization of the historic sources combined with the typological thinking of some authors has led to an overly simplified view of a complex and variable agricultural system. I hope that, having these passages in some order and brought together in one place may be of some help to others interested in aspects of agriculture and economy in the Marquesan past.

The passages cited suggest that valleys were heavily cultivated; Marquesans tended a fairly broad subset of the basic Oceanic cultigens; long lists of names for banana and breadfruit suggest that special attention had been devoted to selection and propagation of cultivars

of these two cultigens; taro was grown with water; fire was used for clearing ground; arboriculture as a major component of a productive system fascinated the Europeans for it is almost universally commented upon and there are extensive descriptions of breadfruit and its preserved paste, *mā*. Gardens were interspersed with houses and some were in locations remote from houses; the evidence we have for an agricultural calendar relates to breadfruit and the timing of its three or four harvests annually; the food required for *ko'ika* [various kinds of feasts] must have made them an integral part of production planning and crop management; swine were an important symbol of wealth and prestige important in *ko'ika*. Chickens appear to have been used mostly for their feathers; fishing was well developed, an important part of daily subsistence, and – contrary to some academic opinions, included offshore as well as other techniques; early visitors give conflicting accounts of Marquesan canoes, but intra-

archipelagic travel clearly happened regularly. Drought and attendant food shortages occurred but there are reasons to question the degree of severity that has been commonly portrayed.

Latin binomials for plant names follow the Germplasm Resources Information Network (GRIN) taxonomic database.

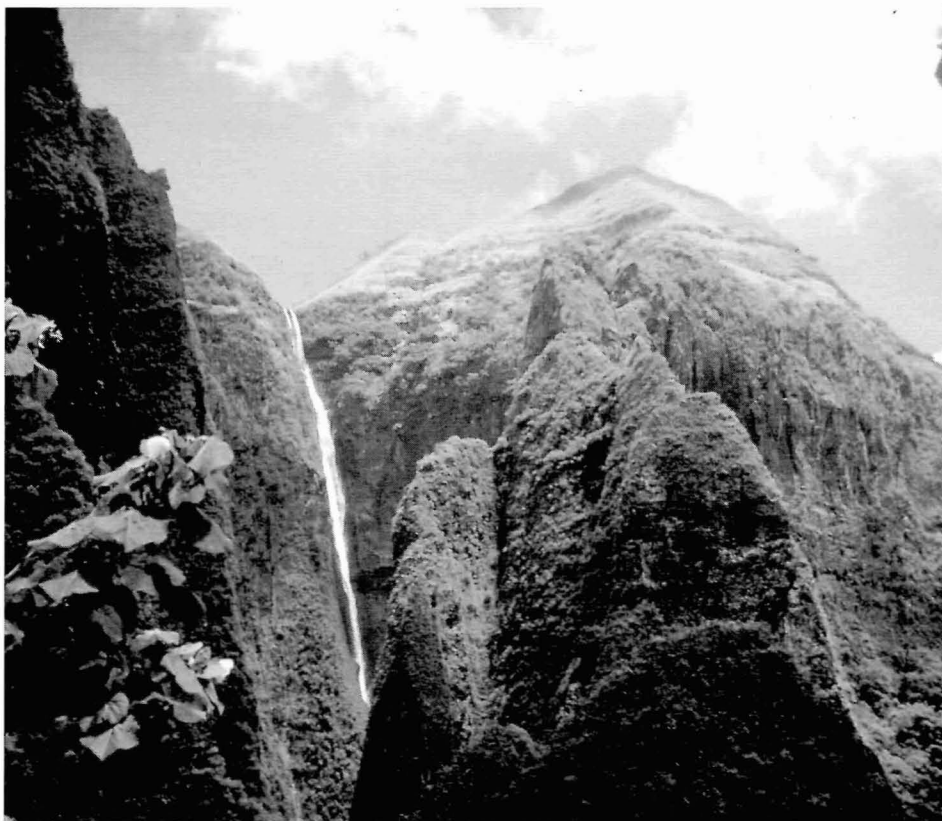


Figure 3. A view of Nuku Hiva, Marquesas Islands, showing some of the difficult terrain and a scenic waterfall. Photograph by M. A. Clark.

Marquesan words are used in their Nuku Hiva form. Original spelling and grammar have been retained in quoted material without the use of “sic”, where meaning is ambiguous. I have endeavored to add clarification. All material added to quoted passages is in brackets.

The date that observations were made and their publication date cited in this text are often quite separate. To allow the reader to situate passages in spatial and temporal context, I have attempted to make obvious the date and place that ob-

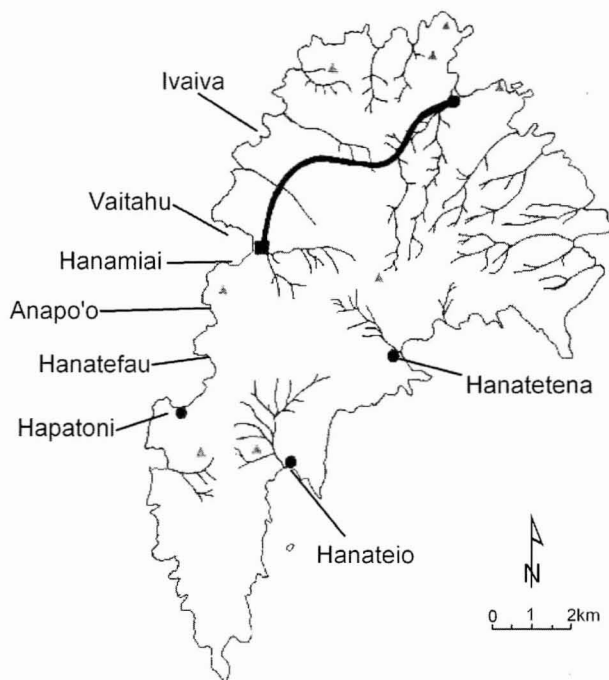


Figure 4. Tahuata Island showing places mentioned in the text and principal drainages. Heavy line indicates the modern Vaitahu-Motopu road.

servations were taken. Some will find this cumbersome, but I hope that it will help to clarify instances where there is broad agreement in time and across space, and where there is variation in time and across space.

#### GENERAL DESCRIPTIONS OF AGRICULTURE AS PART OF THE LANDSCAPE

THE VISIT OF THE *RESOLUTION* IN 1774 began sustained contact between the Marquesas and the Western world. For the magnitude of this event and the subsequent changes this contact set in motion, Cook's sojourn in the Marquesas was deceptively short. The *Resolution* stayed but four days at Vaitahu Bay on the island of Tahuata (Figure 4). Members of the expedition also visited other valleys on western Tahuata. The accounts of three men – Captain James Cook, the naturalist



Figure 5. Hiva 'Oa Island showing places mentioned in the text and principal drainages. Heavy and dashed lines indicate modern primary and secondary roads.

George Forster, and his father Johann Reinhold Forster – record this brief time in the Marquesas.

The impressions of these three give us our first glimpse of agriculture in the Marquesas. Observations continue with well into the nineteenth century. The included passages suggest that there was little change during this fifty-year period as far as concerns the broad pattern of agriculture on the landscape. Arboriculture dominates the descriptions: valleys planted in groves of coconut, breadfruit, and similar useful trees. Other cultivation techniques are mentioned or hinted at throughout. Later sections deal with specific aspects of Marquesan agriculture in more detail.

Cook (1961:372) mentions fruit trees in the valleys of Tahuata “[1774]...a narrow ridge of hills of considerable height extends all Whole length of the isle, other ridges take their rise from the Sea and with an unequal ascent join the Main Ridge, these form deep and narrow Vallies which generally terminate at the foot of the Main Ridge, these Vallies are full of fruit and other trees and afford Rivulets of fresh Water.” The English expedition did not land at Hiva 'Oa (Figure 5), but Cook (1961:372) speculates on the presence of cultigens: “[Hiva 'Oa] is full of Hills which rise in ridges directly from the Sea to a considerable height, these ridges are disjoined by deep Vallies which are clothed with wood, and as well as the sides of some of the hills and ridges, most probably many of these are fruit trees, however the Country in general appears Barren,<sup>1</sup> it is nevertheless Inhabited.”<sup>2</sup>

While sailing between Hiva 'Oa and Vaitahu the English “... passed several little coves,<sup>2</sup> where the white foaming surf tumbled in upon the beach. The two projecting points of every cove included a valley, filled with forests and plantations, of a pleasing verdure. On every beach we saw inhabitants running about or gazing at our ship” (G. Forster 1968:348). Forster's mention of “forests and plantations” suggests that, with the word “plantations,” he saw cultivation techniques other than arboriculture.<sup>3</sup> (J. R. Forster, et al.

<sup>1</sup> A curious remark: The *Resolution* would have passed the many small valleys of the area known as Ha'amau as well as the large valleys of Atuona and Ta'a'oa.

<sup>2</sup> The *Resolution* sailed along the south coast of Hiva 'Oa, east to west.

<sup>3</sup> Probably on the north and northwest coast of Tahuata.

1996:116) indicate that “plantations” occupied a large part the Marquesan landscape: “The Marquesas are also more wooded [than Tahiti], though the variety of plants is not, by far, so great, owing to the room which the plantations take up in the woods themselves.”

The English hiked inland at Vaitahu, attempting to reach a palisades on a ridge. A description of the hike adds details about the relationship between “forests and plantations” and the first written mention of animal husbandry:

“We soon crossed the fine rivulet, at which our people watered, and followed the path on the north side, seeing that the greatest number of inhabitants had come down from thence. The ascent was at first not very fatiguing; several gentle hills formed the foreground, which were almost level at the summits, and contained *several spacious plantations of bananas*, in excellent order. These spots always opened upon us unexpectedly, as the rest of our way lay through a *close tufted wood of fruit-trees*, mixed with other sorts, extremely pleasant to us on account of the thick and cooling

*tained excellent plantations, and groves of various fruit-trees....* About the houses we frequently saw hogs, and fowls of a large sort, and now and then some rats.”<sup>4</sup> (G. Forster 1968:357-58, italics mine)

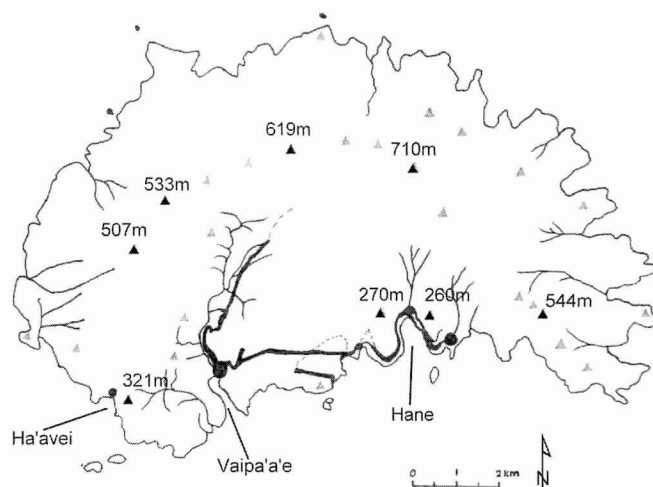


Figure 7. 'Ua Huka Island showing places mentioned in the text and principal drainages. Heavy lines indicate modern roads.

Less than twenty years later, Fleurieu described plantations in several valleys on 'Ua Pou (Figure 6):

“[1791] The south-west part of the great island, along which the Solide ranged at the distance of half a league, presents some small sandy bays, on the skirts of which, among the plantain and bread-fruit trees, cocoa-palms, and other large trees, were perceived some scattered huts, from which the inhabitants issued in order to run to the shore and contemplate the ship. The aspect of this island, in this part, is as agreeable as it is varied. Hills, the gentle slopes and the summits of which are covered by lively verdure; *vallies shaded by diversified plantations*; several rivulets which were distinguished from the ship, and which restore to the land, dried up by the parching rays of the sun, the coolness and humidity necessary for the reproduction of plants; lastly, a beautiful cascade, whose foaming waters precipitate themselves into a valley: all these objects, united in a small place, alternately attracted and agreeably fixed the eye. Some high mountains, the summits of which are arid and broken, and which must refuse every kind of culture, occupy the centre of the island; but these mountains cease to appear lofty, when the view is directed to some peaks of naked and inaccessible rocks, whose sharp spires seem to belong to steeples.” (Fleurieu 1801:147-148, italics mine)

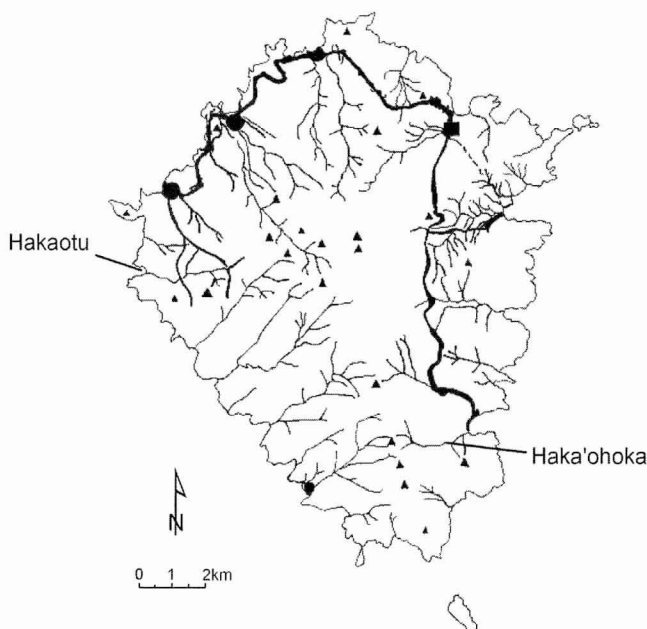


Figure 6. 'Ua Pou Island showing places mentioned in the text and principal drainages. Heavy lines indicate modern roads.

shade. ... Having advanced near three miles from the seaside [we] went on about two miles farther.... [The summit] appeared indeed at least three miles distant from the place where we stopped, the greatest part of which seemed to be infinitely steeper than what we had hitherto left behind us. The whole ground, as far as we had gone, was covered with a rich mould, and con-

<sup>4</sup>As noted by Crook (1952:cxlv) 20 years later, these distances cannot be accurate given the small size of Vaitahu: “The Vallies run up into the body of the Ridge, toward the Centre of the Island, for 1 ½ or 2 Miles; but the windings, and the Steepness of the path, have led Mr. Forster, and some others, to suppose the distance from the Shore to the central Ridge, to be much greater than it is.”



Almost a year later, Hergest (Vancouver 1984:781) also approached the southwest point of 'Ua Pou and reports that "the land was seen to be well cultivated and numerous inhabited."

Hergest (Vancouver 1984:781) notes of 'Ua Huka (Figure 7) that, "In the vallies were a great number of cocoa nut and plantain trees, and the whole island<sup>5</sup> presented an infinitely more verdant and fertile appearance than those they had just quitted." On Nuku Hiva (Figure 8), Taioha'e Bay was "bounded by a most delightful and fertile country" and "seemed to be highly cultivated" (ibid.:782). Hergest's (ibid.:783) description of Eiao Island mentions a coconut grove on the northwest side, but he saw no people there.<sup>6</sup>

Crook (1952:clxvi) points out that, on Nuku Hiva, some cultivatable land was not used: "The Interior Country which is distinguished by the name of Tove,<sup>7</sup> has the appearance of being fit for cultivation, but is wholly uninhabited and does not produce Wood, except in the Ravines, which are formed by the numerous brooks; and these are overgrown with trees and bushes."

On the north coast of Hiva 'Oa, somewhere west of the midpoint, Fanning (1833:125) "... hove the ship to, abreast a valley covered with the bread-fruit and cocoa-nut trees [1798]." On a walk from east to west at Taioha'e, he (ibid.:182) noted "several groves of the valuable bread fruit and cocoa-nut trees...."

From observations around 1800, Robarts<sup>8</sup> repeatedly speaks of the abundance of certain cultigens in valleys he visited. For example, at a valley on East Tahuata, probably Hanateio, the "... trees was loaded with breadfruit and cocoa nutts, Plantains, etc." (Robarts 1974:65). Or of Puama'u on Hiva 'Oa: "It is well stocked with Bread fruit and cocoa nutt trees," and we "walked thro groves of Breadfruit trees and great quantities of plantain trees, till we arrivd at the Chieftains house" (ibid.:75). Another valley on Hiva Oa, probably Hana'upe. "... is well stocked with breadfruit and cocoa nutt trees" (ibid.:74). And more on Hiva 'Oa, inland Hana'iapa Valley (ibid.:90), an unnamed valley (ibid.:87), and on Nuku Hiva in Hapa'a territory (ibid.:102).

The Russians visited Kiatonui at his house "about a mile inland" in Me'au Valley at Taioha'e. The description of their walk to the house gives a feel for what must have been the near-ubiquitous presence of cultigens:

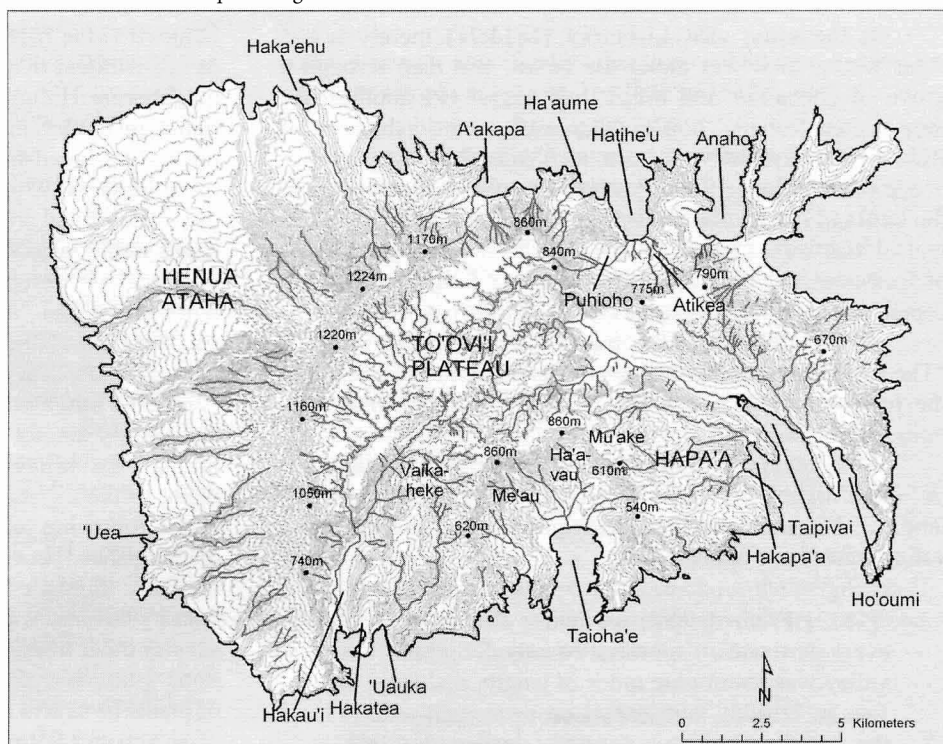


Figure 8. Nuku Hiva Island showing places mentioned in the text and principal drainages.

"[1804] The way thither led through a copse of cocoa trees, breadfruit, and birch trees; the grass grew so luxuriantly that it reached to our knees, and incommoded us very much as we walked; at length we came to a foot-path . . . which was kept with the greatest cleanliness. Here we entered a romantic, beautiful country, and found ourselves in a large forest, that seemed to reach to the chain of mountains behind. *The greatest part of the trees in this forest were apparently about seventy or eighty feet high, and chiefly cocoa and bread-fruit trees*, as was easily to be distinguished by the fruit with which they were all loaded. Several winding rivulets, that rushed with considerable noise and rapidity from the mountains, and whose beds of large broken rocks formed the most beautiful cascades, crossed each other and watered the habitations of the valley. In the vicinity of these habitations, *a number of plantations of taro-root and cloth-mulberry, laid out in great order, and surrounded with a neat enclosure of white staves*,<sup>9</sup> bore the appearance of belonging to a people who had already carried cultivation to a considerable extent...." (Krusenstern 1813:124-25)

<sup>5</sup> Tahuata.

<sup>6</sup> Krusenstern (1813:141) writes of Eiao and Hatut'a: "... the inhabitants of the neighboring islands visit them for the sake of their cocoa-nuts."

<sup>7</sup> To'ovi'i.

<sup>8</sup> Edward Robarts was a sailor who deserted his ship, the *New Euphrates*, a few weeks before Christmas, 1798 (Robarts 1974:6-11).

<sup>9</sup> A footnote inserted in the original here reads, "The tree from which these staves are cut, in the language of Nukahiwa, is called *fau*; it is perfectly white and very light."

Of the same visit Lisiansky (1814:71) merely notes: "Our way at first was along the beach, and then through a grove of cocoa-nut and bread-fruit trees." On another day they visited Robarts' house: "Our walk to the habitation of Roberts was extremely pleasant, as it extended along an eminence, from whence we had a beautiful view of our ships in the bay, and *the plantations of the natives in the valleys*. [The house] was well adorned on the outside with different kinds of fruit-trees, which afforded us, after our fatigue, a very acceptable repast" (Lisiansky 1814:73-74, italics mine).

Porter (1970:85, italics mine) visited Hakau'i in 1813: "The rocks forming this valley are steep and inaccessible, but the lower grounds *fertile and thickly covered with plantations*."

At Taipivai on Nuku Hiva, Porter (1970:31) describes it as "more highly cultivated than any other [valley] in the island...." His more detailed description suggests how some valleys must have appeared:

"[1813] From the hill we had a distant view of every part, and all appeared equally delightful. The valley was about nine miles in length, and three or four in breadth, surrounded on every part, except the beach, where we formerly landed, by lofty mountains. The upper part was bounded by a precipice of many hundred feet in height, from the top of which a handsome sheet of water was precipitated, and formed a beautiful river, which ran meandering through the valley, and discharged itself at the beach. Villages were scattered here and there, *the bread-fruit and cocoa-nut trees flourished luxuriantly and in abundance, and plantations laid out in good order, enclosed with stone walls, were in a high state of cultivation*, and everything bespoke industry, abundance, and happiness. Never in my life had I witnessed a more delightful scene...." (Porter 1970:98, italics mine)

Sixteen years later Taipivai was described similarly:

"... the whole interior of the valley and the mountain above presented one mass of groves, rich in splendid and various verdure. To the mountain's top the cottages of the Taipiis, bleached by alternate sun and rain till white as plastered dwelling at home, were seen sprinkled among the hanging woods. Perched high in the solitudes of the forest, and but partially exposed to the sight amid the thick shades by which they are encircled and overhung ..." (Stewart 1970:325)

The meaning of "groves" in the previous passage is ambiguous; it may or may not refer to cultigens. Stewart (1970:341-2) offers more detail on Taipivai later: "... an extensive plantation of bread-fruit, studding the rising grounds in lines as straight as those of a carefully arranged orchard at

home. It is the first instance of a regular order in any growth of much extent that I have met with in the South Sea ..." At neighboring Ho'oumi the "valley is filled with verdure, and richly covered to the mountain tops with *groves* of the cocoa-nut and the bread-fruit" (Stewart 1970:222, italics mine).

Stewart (1970:312) also describes Ho'oumi as "... a narrow valley filled with luxuriant groves. Behind this the mountains, richly wooded to their summits, and sprinkled with cottages, rise abruptly till lost in the clouds." He elsewhere notes that it has "thick and heavy groves" of breadfruit and coconut (ibid.:319).

Taioha'e was apparently equally well planted in 1829: "From the beach in the centre, luxuriant groves spread thickly and widely among bright un-wooded hills and velvet lawns through the valleys behind and up the lower hills skirting them, to the highest elevations" (Stewart 1970:225). Perhaps in the following passage on Taioha'e, "artificial cultivation" distinguishes between arboriculture and other cultivation methods: Taioha'e "The surface of the valley is uneven, and entirely covered with groves of the bread-fruit, cocoa-nut and various other trees, with scarce a sign of any artificial cultivation;" (the passage goes on to describe all the different kinds of plants he saw in enclosures) (ibid.:237-8).

Echoing Porter's account, Stewart (1970:280) describes Hakau'i as having "a circular sand beach, skirted with heavy groves of the cocoa-nut and bread-fruit, the pandanus, tufted palmetto, and flowering hybiscus."

The observers quoted in this section are nearly unanimous in describing the extensive use of Marquesan valleys for arboriculture from 1774 through the end of the 1820s. Other cultivation techniques can be inferred from the repeated mention of "plantations," either when non-tree cultigens are mentioned growing in them, or when used in juxtaposition to descriptions of arboriculture. Both of these aspects appear widespread on the islands described.

## SPECIFIC LOCATIONS OF GARDENS

AS WELL AS GENERAL DESCRIPTIONS of agriculture as part of the landscape, there are a few references to specific locations of gardens. The ones that mention houses are not numerous but they are spread around the archipelago and over an eighty-year period, suggesting a widespread pattern.

### Near houses

Without specifying which island he is referring to, Cook (1961:375) notes that "Their Dwellings are in the Vallies and on the sides of the hills near their plantations...." Likewise, J. R. Forster (1982:490) – probably referring to Vaitahu on Tahuata – writes: "Their houses are surrounded by plantations of breadfruit-Trees, & Banana walks, & a very few Coconut Trees are among them." On southwest 'Ua Pou in 1791, Fleurieu (1801:147-148) saw "scattered huts" amongst "the plantain and bread-fruit trees, cocoa-palms, and other large trees" on the "skirts" of some "small sandy bays."

Of Taioha'e in 1798, Fanning (1833:182-4) writes that the "king's dwelling"<sup>10</sup> was situated in the center of a grove of

<sup>10</sup> This was probably the house of his mother Butahaie.

bread fruit trees, having immediately in front of it, cocoa and palm trees, very handsomely arranged in rows, while on the outskirts, and towards the sea, there is an acre or more of very handsome grass, forming a beautiful fore ground for the whole, and completing a view truly beautiful.”

On an excursion inland at Taioha'e, the Russians noted in “the vicinity” of some “habitations, a number of plantations of taro-root and cloth-mulberry, laid out in great order, and surrounded with a neat enclosure of white staves....” (Krusenstern 1813:125). Stewart (1970:318) noted groves and enclosures near a *tau'a*'s (variously glossed as “prophet,” “inspirational priest,” or “shaman”) house a few hundred yards back from the beach at Ho'oumi. And in the upper part of Hapa'a territory, he and his party followed the course of a stream “through successive groves of bread-fruit and cocoa-nut, interspersed with cottages and plantations” (ibid.:253) (Figure 9).

Jardin, who was on Nuku Hiva in 1853-4, gives some ambiguous information. He says that there were no “regular plantings” around houses, but he goes on to mention sugar cane, bananas, and *ti*:<sup>11</sup> “Cependant on ne voit point autour de leurs cases de plantations régulières; quelquefois un coin de terre est cultivé en cannes à sucre, dont ils se servent lorsqu'ils ont une fête ou koika, en bananiers, dont ils mangent les produits que dans les mêmes circonstances, ou en *ti*, *Cordyline australis*, dont ils se servent des feuilles pour tapisser les trous à popoi”<sup>12</sup> (Jardin 1862:21).



Figure 9. Engraving of an 1838 Nuku Hiva household cluster (from Ottino and de Bergh 1990:66 after Dumont d'Urville). Note the depiction of coconut, banana, and possibly breadfruit trees near the buildings.

<sup>11</sup> *Cordyline fruticosa*.

<sup>12</sup> An informant from Taipivai now in his sixties recently commented that, in his lifetime he has seen the amount of *Cordyline fruticosa* planted near dwellings greatly reduced. He specifically linked this to the fact that people rarely make *mā* now, or do so in above-ground containers that do not require leaf linings.

<sup>13</sup> Ha'avau.

<sup>14</sup> 'Uauka. A possible etymology for this name is Sour (as in fermented) Pit.

<sup>15</sup> Hau, fau.

#### Near me'ae

One passage specifically mentions plantings around a me'ae, or temple. It is from Taioha'e in 1813:

“In one of those excursions, I was led to the chief place of religious ceremony in the valley. It is situated high up the valley of the Havvous<sup>13</sup>.... In a large and handsome grove formed by bread-fruit, cocoa-nut, and toa-trees (the tree of which the spears and war clubs are made) and a variety of other trees with which I am not acquainted, situated at the foot of a steep mountain by the side of a rivulet, and on a platform made after the usual manner, is a deity formed of hard stone, about the common height of a man, but larger proportioned in every way.” (Porter 1970:109-110)

#### Remote

While procuring food and planting stock for the people preparing his land, Crook visited a garden at what appears to be an inland part of 'Uauka Valley on Nuku Hiva:

“They therefore, proceeded across the two nearest Vallies to the West of Tiyofoe; the second of which is Ouwaouke.<sup>14</sup> They came to a Spot of high Ground, where the Faou<sup>15</sup> trees, and other wood, had been scorched round the Roots, so as to prevent them from springing again; and the space between the dead trees was filled up with Cloth plants, Kavva, Plantains, Sugar Canes, and a few breadfruit, which seemed to grow very well.” (Crook 1952: clxxviii).

Crook (1952:clxxvix) then visited another plantation, west of Taioha'e, apparently inland above 'Uauka or Hakatea (perhaps near Vaukaheke). Once, after swamping their canoe off the coast Crook and company pass through “... the upper parts of the Vallies east of Tiyofoe [Taioha'e], where they found a few straggling houses and plantations, at a great height and distance from the Sea, which were occupied by people of Hapa [Hapa'a]” (Crook 1952: clxxvix).



## AGRICULTURAL CALENDAR

THE ONLY INFORMATION ON THE AGRICULTURAL calendar available in the sources used in this study concerns the harvest periods for breadfruit. They list three or four harvests. Each gives a different harvest as the smallest, but they agree that the January-February period was the largest. Crook writes:

“After Meie nue,<sup>16</sup> or great Harvest in January, (which, with February, may be called the principal Summer Months) a smaller breadfruit crop, called Towhó, quickly follows. The third, called Koniue (?gms, Komue?), is in May or June. The forth [sic] which is known by different names, takes place in August, from which, till January, is their scarcist [sic] Season.” (Crook 1952:cxl)

Crook (1952:cxli) adds the further detail that “the Bread Fruit Crop in August, is at Tahouatta, called Kaveua, at Nuguheva, Mettaeke.<sup>17</sup> It takes the latter name from that which they give to the Pleiades, that Constellation beginning to appear above their Horizon at the same season.”

Robarts (1974:271-72) reports that “the grand gathering of Bread fruit is in Feb<sup>y</sup> and March, and the next is in or about June. The third, which is scanty, is in Sept<sup>r</sup> & October.” He writes of provisioning a ship in December 1798; “In the fore part of the day we had some fine hogs brought on board. The breadfruit was not ripe; we got but few” (ibid.:49). He also suggests that weather had an effect on the timing of breadfruit harvests; “One thing I could observe was that the Bread fruit was later some seasons than others” (ibid.:242).<sup>18</sup> In May 1804, “as the Bread fruit was nearly fitt for gathering, I dug a new store pitt ready to receive my crop of fruit” (ibid.:140).

Lisiansky (1814:90-91) writes that the breadfruit “... tree, I was told, bears fruit here three times in the year. The first and best crop, called by the natives *mainooé*,<sup>19</sup> ripens about our January. The second, which is the poorest, about the middle of June; and the third, about September.”

Thomson (Craig 1980:39) does not comment on periods of breadfruit harvest but does indicate the period of the largest: “The sun divides their day from their night, but does not regulate their year, which extends from one large breadfruit season to another, from February to February.”

Crook (1952:cxxix) also reports that the calendar was based on the largest breadfruit harvest: “the principal one, which is in January, serves to distinguish and to count their Years, being called Meie nue, or the great breadfruit.”

<sup>16</sup> *Meinui*.

<sup>17</sup> *Mataiki* (small eyes) = Pleiades.

<sup>18</sup> Crook (1952:clxxiv) notes that maturation of breadfruit was later at higher altitude gardens in Hapa’a.

<sup>19</sup> *Meinui*.

<sup>20</sup> Dordillon (1904:231) *pona*, a system of counting by fours.

<sup>21</sup> Crook’s dictionary contains the entry: “*tinne* [*tini*] (at Tahouatta) 80,000 of breadfruit, 20,000 of other matters ... (at Nuguheva) 40,000. also used at both places for an indefinite number” (Crook et al., 1998:48).

Table 1. Marquesan breadfruit harvest periods according to four historic sources.

Source	1 <sup>st</sup> Harvest	2 <sup>nd</sup> Harvest	3 <sup>rd</sup> Harvest	4 <sup>th</sup> Harvest
Crook 1952	January	“quickly follows”	May or June	August
Lisiansky 1814	January	“middle of June”	September	-
Craig 1980	February	-	-	-
Robarts 1974	February-March	June	September-October	-

## COUNTING

THOUSANDS OF BREADFRUIT were harvested and stored as *mā*. Crook (1952:cxxix) claims this was when Marquesans used their highest numbers. Although there are similarities, Crook and Robarts writing of the turn of the nineteenth century and Dordillon writing of a period fifty to eighty years later give different numbering systems. The assignment of exact numbers to the terms used by Crook and Robarts will be difficult at best. The situation is further complicated by different numeric values for the terms in the major dialect division of southeast/northwest. There may have been further differences between individual islands.

“They tie together two pieces of long grass, at the middle; and at each of their ends, form a sliding knot; which they draw home, round so many breadfruit. Their term for a knot, which is *pona*, hence comes to signify that number, by which they always count the breadfruit, in order to ascertain what quantity they have in store; reckoning so many *ponas*<sup>20</sup> to one *Ou* [*’au*], ten *Ous* to one *Manne* [*mano*], ten *mannes* to one *Tinne* [*tini*], which means at different islands, from 40 to 80 thousand. ... some have ideas, perfectly clear, of numbers still higher than those already given, reckoning ten times to a *Tuheva*, and ten *tuhevas* to one *pohho*; which amounts to, from 4 to 8 Millions.”<sup>21</sup> (Crook 1952:cxxix)

Robarts (1974:299) notes that “40 is the highest leading number Viz. Ten times forty makes *Oue* [*’au*], ten *Oues* makes one *Ma’nu* [*mano*], ten *Ma’nus* makes one *tee’na* [*tini*], Ten *Tee’nas* makes one *Pu’nee* [*puni*?], ten *Pu’nees* makes a *Tuth’e’pauve*. They, at this loose count, as the word *Tuth’e’pauve* signifies numberless.”

Dordillon (1904:22-23) lists the following cardinal numbers for the “northwest Marquesas:” 40 = *touha*; 400 = *e tahi ’au*; 4,000 = *e tahi mano*, *mano*. For the “southeast



Marquesas" the corresponding numbers are listed as: 40 = toufa, e tahi toufa; 200 = e 'au, e tahi 'au; 2,000 = e tahi mano, mano; 20,000 = e tahi tini, tini (Dordillon 1904:19-20).

## HYDROLOGY

ROBARTS (1974:262) WRITES: "There is no rivers, only brooks of water which run into the sea. But in the Dry season the water does not reach the beach in some places." He doesn't specify where this is, but is a good description of the hydrology of Taioha'e.

Thomson (Craig 1980:9) notes [ca. 1840] that, "... the Islands are everywhere well supplied with good water; there are no large rivers, but many brooks and springs," and specifically of Taioha'e that water "... is plentiful and good, except after heavy rain, when the stream mixes with a mineral spring upon its bank. The mineral water, although disagreeable is, I believe, perfectly wholesome, being impregnated with iron" (ibid.:10).

## SOIL

REFERENCES TO SOIL CHARACTERISTICS are rare and general. They speak uniformly of the fertility of the soil. George Forster (1968:358), on their long hike inland at Vaitahu, noted that the "... whole ground, as far as we had gone, was covered with a rich mould..." His father wrote that the soil is "... clay mixed with mould, which the natives manure with shells." (J. R. Forster, et al., 1996:31). This is the only evidence of shell as a soil additive in the Marquesas; I wonder if Forster wasn't mistaken.

Fleurieu gives the following description:

"The soil of the vallies, according to Captain Chanal, is a very strong mould, sometimes black, sometimes red, and very fit for vegetation. Surgeon Roblet says that, although mountainous, the soil consists of a strong black earth, where grow various species of lichens, grasses, purslains, and shrubs. The thick forests which cover the vallies, the trees scattered on the hills, and the verdure which is seen to reign on the steep sides of some of them — every thing attests the fecundity of the soil." (Fleurieu 1801:77)

Robarts (1974:245) describes the soils of the "parts Inhabited" as "for the most part of a marle or Loom Kind with large stones, some as big as a coach, others larger. The sides of the hills which form the valleys is generally fertile, good soil covered with reeds & trees..." At a specific spot at

Taioha'e he "... tryd the ground and found it to be a fine, rich, Black soil, amazing strong" (Robarts 1974:277). Thomson (Craig 1980:8-9) suggests that the "... soil in the vallies is almost all that is capable of cultivation, but it is good, and here all the varieties of tropical produce may be reared."

Porter comments on 'Ua Huka:

"But on our nearer approach, the fertile valleys, whose beauties were heightened by the pleasant streams and clusters of houses, and groups of the natives on the hills inviting us to land.... Indeed, the extreme fertility of the soil, as it appeared to us after rounding the S.E. point of the island, produced sensations we had been little accustomed to, and made us long for the fruits with which the trees appeared every where loaded." (Porter 1970:7-8)

Crook (1952:clxv) thought that the "Northern and Western Coasts" of Nuku Hiva "resemble Tahouatta in their form, but are more fertile, and by far more populous..."

## CULTIGENS

THE EARLY ACCOUNTS GIVE FEW DETAILS about cultigens.<sup>22</sup> We can gather that Marquesans used some subset of the widespread Oceanic cultigens. None of the lists can be thought of as exhaustive. The accounts mostly describe what food items the ships acquired during their stay. Others are tantalizingly vague such as George Forster's (1968:359) characterization of the Marquesan cultigen inventory: "Their food consists of the same variety of fruit and roots which are common at Taheitee, except the apple (*spondias*)."<sup>23</sup> Equally frustrating is Cook's, "... and some other roots." Any of the reports dating to after the English expedition in 1774 may potentially have post-European introductions. Distinguishing which plants were in the Marquesas prior to 1774 will have to be a task for archaeology.

Cook (1961:372) writes of Tahuata, "The Refreshments to be got here are Hogs, Fowls, Plantains, Yams and some other roots, Bread fruit and Cocoa-nutts, but these last are scarce." George Forster (1968:351) mentions both "... plantains and bananas."<sup>24</sup> He also notes "... the stately ratta, or bananas." He also notes "... the stately ratta, or Taheitee nut-tree (*inocarpus*)"<sup>25</sup> (ibid.:355). At Tahuata, a kava<sup>26</sup> root was offered to the Europeans (ibid.:348). J. R. Forster (1982:490) notes that, "They had a good deal of Sugarcane." Such is our understanding of the suite of Marquesan cultigens at the beginning of sustained European contact.

A decade and a half later Fleurieu (1801:83-84) observed, "Besides the three principal fruits which I have men-

<sup>22</sup> I am ambivalent about what to call a cultigen. Marquesans used plants their ancestors found growing in the archipelago when they arrived as well as ones they introduced. Among the plants they used some were never given any care save harvesting, others were minimally tended, whereas others were given a great deal of care from planting to harvest. Should *Inocarpus edulis* be called a cultigen? This food tree clearly is a Polynesian introduction, but there is no evidence that it was regularly planted or tended. The very important breadfruit was planted, but apparently received little care afterward beyond harvesting.

<sup>23</sup> *Spondias dulcis* or the Tahitian *vi*.

<sup>24</sup> At this period it is not clear how Europeans were using the two terms; and they probably were not used consistently. In later accounts, it appears that "mountain plantain" had widely been accepted as referring to *huetū*—the *fe'i* or *Australimusa* bananas.

<sup>25</sup> *Ihi*, or *Inocarpus fagifer*.

<sup>26</sup> *Piper methysticum*.

tioned, the plantain, the cocoa-nut, and the bread-fruit, there is also a sort of sweet potato, a species of apple<sup>27</sup>, ginger<sup>28</sup>, cucumbers, like those which grow without culture in our West India Islands, water-cress, and purslain, in abundance and of an excellent quality; the yam, as well as some other roots...<sup>29</sup> The French indulged in 'ama (*Aleurites moluccana*) and felt the full impact of its emetic and purgative properties (Fleurieu 1801:86, Robley (n.d.:14-15) claims he saw Marquesans eat it). Fleurieu (ibid.:116) notes that kava was used. The French "neither perceived lemons nor oranges" (ibid.:85), and the maize planted by Spanish was no longer there (ibid.:87-89).

Crook (1952) lists chickens, pigs, paper mulberry, breadfruit, coconut, "heka" (probably *kehika*), plantains, *ihī*, noni, "ho,"<sup>30</sup> sugar cane, ti, fern root, sweet potato, pia, yams, taro, kava, capsicums, ginger,<sup>31</sup> pumpkin,<sup>32</sup> pineapples, and candlenut. Crook's dictionary (Crook et al. 1998:30) has an entry for *kape* (his "kōppe"). Crook confirms George Forster's observation that there was no *vi*.<sup>33</sup> Fanning (1833) noted coconuts, breadfruit, yams, bananas, *hau*<sup>34</sup> bark.

Robarts (1974) mentions yam, sweet potato, "other roots which are eaten in times of scarcity," ti, breadfruit, coconuts, plantains, taro, and *kehika*. Langsdorff (1813:106) writes that, breadfruit, coconuts, bananas, "Indian kole,"<sup>35</sup> taro, yam, and sweet potato "are the principal articles of food among the vegetable kingdom...." He also mentions sugar cane, mulberry (for *tapa*), *vi*, *ihī*, ti, and *kape* (ibid.:107). Porter (1970) saw plantains, bananas, breadfruit, coconuts, sugar cane, taro, cloth plant, and "&c."

Dalton (1995) noted coconuts, breadfruit, bananas, plantains, pumpkins, papaya, yams, kava, arrowroot, sugar cane, taro, and "etc." Apparently, by the 1820s pumpkins and papaya were established enough to be traded with shipping.

By about 1840, more European introductions were growing. The Catholic missionary Gracia (1843:139, 219-220, 226) lists breadfruit, yam, taro, ti, *kape*, kava, sweet potato, *pia*,<sup>36</sup> coconuts, bananas, *kehika*, *ihī*, guava, lime, "wild apple," "tree melon," pineapple, on some islands oranges, and "a thousand other fruits or plants all the way to seaweed which serves as salt and seasoning when they have nothing to eat with their breadfruit paste." The Catholic missionaries were cultivating radishes, lettuce, beans and corn but no other Europeans vegetable would grow, although mustard, "cresson ou pourpier," chilies, and "la civette" grew wild (ibid.:219-220). He also writes that "quelques plantes et tiges qui viennent là à merveille; ce sont pour les premier, les giromons, les citrouilles et les pastèques ou melons d'eau; ce sont, pour les secondes, le tabac ou *nicotiana*, qui probable-

ment pourtant n'est pas indigène, puis la canne à sucre (*saccharum officinarum*) qui y est d'une excellente qualité ...." (ibid.:221).

The English Protestant missionary Thomson (Craig 1980:15), also writing in 1840, lists an equally wide array of indigenous and European introductions:

"The principal plants which constitute the Flora of the Marquesas are: Arrowroot, bamboo, banana, banian, breadfruit, calabash, candle nut, castor oil plant, coral tree, cocoanut tree, cotton tree, dragon tree, Indian mulberry, iron wood, kava root, mountain plantain, mountain or dry taro, papau apple, paper mulberry, pineapple, Pomeorose apple, sandal wood, screw pine, soap berry tree, South Sea chestnut, South Sea ginger, sugar cane, sweet potatoe, Syrian mellons, taro, tobacco, turmeric, yam, *miro*, *temanu*, *hutu*, *capsicum*, two species of palm trees, two species of tree fern. [The latter, I believe, are not found upon any of the other islands of the Pacific and even here they are so rare that few of the natives know anything about them.]

"These trees and a few more with the names of which I am unacquainted are all that are useful or interesting in the Marquesas. English Missionaries have introduced coffee, indigo, dates, oranges, lemons, limes, custard apple (two kinds), walnuts, Brazilian plumb, pumpkins, watermelons, musk melons, beans, peas, cabbage, onions, lettuce, pumpkins. These [and] a few more useful exotics and a number of introduced garden flowers are now growing in our garden and doing well; strawberries and Irish potatoes are both growing but not promising well."

Clearly, by mid-century the Marquesan cultigen inventory had come close to its modern composition. Accounts after this period add little to understanding traditional Marquesan agriculture.

## AGRICULTURAL TECHNIQUES

THERE IS LITTLE INFORMATION in the historic accounts about Marquesan agricultural techniques. The perceptions of early visitors to the Marquesas were heavily influenced by the romantic ideas then current in Europe. This, combined with the radically different climate and cultivation requirements of most Oceanic cultigens led generally to a poor understanding

<sup>27</sup> Probably *kehika* – *Syzygium malaccense*.

<sup>28</sup> This is curious. Could the common spice ginger – *Zingiber officinale* – have been introduced before 1792? Or he is referring to a flowering member of the Zingiberaceae family, or turmeric – *Curcuma longa*.

<sup>29</sup> Christian (1910:212) mentions "Naupata, A sort of cress" and "Mahi, water-cress." Dordillon (1904:172) lists mahi as "cresson" and naupata, naupota, tarepota, and terepota as mustard (1904:195, 260).

<sup>30</sup> The identity of this plant is unknown to me.

<sup>31</sup> Elsewhere Crook (1952:clxxiv) uses "ginger" in a clear reference to turmeric.

<sup>32</sup> The first record of pumpkin in the Marquesas.

<sup>33</sup> A few years later, Langsdorff (1813:107) found *vi* at Nuku Hiva "but it is somewhat scarce."

<sup>34</sup> *Talipariti tiliaceum* (or the more familiar *Hibiscus tiliaceus*).

<sup>35</sup> I have no idea what this plant is.

<sup>36</sup> *Tacca leontopetaloides*.

of Marquesan agriculture and a diminution of its importance. This section begins with some general characterizations then treats several specific agricultural techniques separately.

Fleurieu (1801:125) thought there was little cultivation; "...agriculture, the first of arts which man must have endeavored to improve seems not to merit their attention; there are seen only a few regular plantations of breadfruit and plantain trees; the rest is left to the care of Nature." Crook (1952:cxix) expressed similar romantic ideas: "The islanders principally derive their support from the Vegetable Kingdom, which yields them spontaneously great abundance and variety, but through their improvidence it is often insufficient. The Breadfruit is their staple article, and the only one which they treasure up against times of need, although it is very seldom planted by them." Robarts (1974:255-56) as well failed to see Marquesan cultivation as agriculture: "Agriculture. Is very little, as their chief food is Bread fruit. They plant tarra, carpee [*kape*] and several sorts of plantain." Krusenstern writes:

"As the Nukahiwiers know but few wants, *cultivation has made very little progress among them*; and less attention is paid to it in this island, than, according to account, in any other of this ocean. There are plantations of cloth-mulberry, taro root, and the pepper plant; but, comparatively speaking, very few, as not merely the want of taro, but the very simple, and poor clothing of the inhabitants sufficiently proved. The breadfruit tree, the cocoa, and the banana, require no attention, and give very little trouble in transplanting, nothing more being necessary than to dig a hole and to set a branch in it; in a month's time the plant is in full growth, and all farther attention unnecessary. *Agriculture employs the men very little.*" (Krusenstern 1813:164, italics mine).

He then contradicts himself with a specific example from Taioha'e: "In the vicinity of these habitations, a number of plantations of taro-root and cloth-mulberry, laid out in great order, and surrounded with a neat enclosure of white staves, *bore the appearance of belonging to a people who had already carried cultivation to a considerable extent*" (Krusenstern 1813:125, italics mine). He also writes of the "superabundance" of coconuts, bananas, and breadfruit at Hakau'i (ibid.:130).

Later observers seem less biased by unrealistic notions of the spontaneous productivity of Marquesan islands. Gracia (1843:148) was impressed with the effort Marquesans put into their gardens (as well as other work) and notes that "...chacun se fait un petit jardin de tabac ou de kava, et soigne quelques bananiers ou quelque plants de mûriers..."

Thomson provides details that hint at a people intimately familiar with their environment and having extensive experience with cultivation:

"[ca. 1840] They are good botanists in their own way; every plant and blade of grass they know by

their respective names; can tell you where they are most likely to be found, what soil suits different plants, and are familiar with the sexual system, designating them in their own language, male and female."

"By experience derived from observation, they manage the cultivation of many plants very well. The paper mulberry they train with care, pruning and tying it. Tobacco they plant upon ground previously covered with ashes; the most approved plan in the West Indies; no one as far as I can learn has taught them. The Cucumis family etc., they inoculate. ... With the medicinal properties of plants they are acquainted, as well as the useful purposes to which the bark, leaves, or timber may be turned." (Craik 1980:40-41)

Jardin (1862:20) lists seventeen Marquesan terms for different plant parts. He also states (ibid.:19) that plant nomenclature was known not only to specialists but also to normal men, women, and even children.

Delmas (1927:42) provides names of deities pertaining to specific cultigens and their care. He names "Kikomatavaio" as taking an interest in "other cultivators" who are "not numerous."

Tautain goes to great lengths to support his argument against a formerly large population for the Marquesas. As part of this effort he minimizes the role of agriculture. He says that the diet rested solely on breadfruit, with minimal contributions from other cultigens. Tautain was in the Marquesas at a period when populations were near a historic low and falling sharply. The drastic reduction in population size had two important consequences: it left few people to cultivate gardens; and there was a relative overabundance of breadfruit. In this situation, there must have been little incentive to do much beyond harvesting and storing a portion of the breadfruit crop. While Tautain may well accurately describe the situation at the end of the nineteenth century, it is hazardous to project this pattern back in time.

"D'autres faits, d'ailleurs, plaident contre l'existence d'une population très nombreuse. Le taro était peu cultivé ; le bananier ordinaire très peu, et le bananier fehi encore moins, l'igname pas du tout. Autrefois pas plus qu'aujourd'hui ces plantes ne comptaient dans l'alimentation. Le taro paraissait surtout dans les fêtes, la banane n'avait pas plus d'importance que nos gâteaux, et il fallait disette pour qu'on recherchât le *kape* (*Arum marcorrhizum*) et l'igname. La patate (*kuma'a* ; *'uma'a*), le *ti*, (*Dracaena australis*) étaient aussi négligés que le taro ; le second ne servant presque qu'à faire des plats spéciaux aux petits enfants. L'alimentation reposait uniquement sur le fruit de l'arbre à pain. Certes, les arbres à pain ont pu être beaucoup plus nombreux qu'aujourd'hui ; c'est un arbre qui périclète assez facilement – (ne pas exagérer) – et surtout ne donne pas de reje-

tons, s'il n'est pas soigné, si on ne débrousse pas son pied." (Tautain 1897:548-49)

#### *Taro-water*

Crook (1952:cxxx) notes, "Tarro (Tau-o), is in some measure cultivated, as it will only grow in water." Robarts (1974:245) grew taro in water: "The spring [on Robarts' land] flows from under a large stone shaded with plaintains of my own planting and runs into a tarra Plantation that I had cleared with a deal of labour." Thomson (Craig 1980:40) mentions irrigation with specifying the crop: "[ca. 1840] Irrigation is practiced upon some parts of Hivaoa, although by no means general."

Christian (1910:127), writing of the 1890s, mentions that water was piped from a reservoir through bamboo pipes at Hekeani Valley on Hiva 'Oa because the river had dried up six or seven years earlier. Christian (1910:153) also noted piped water from a reservoir at Taioha'e but does not specify what kind of piping was used. Jardin (1862:53), on Nuku Hiva in 1853-4, noted bamboo used to transport water from the river to houses in places where European good were hard to get. It is probably significant that no earlier visitors mention bamboo pipes, and it was likely a European-inspired water transport technique.

#### *Fire*

Robarts (1974:245) indicates the general use of fire in clearing land for cultivation: "The sides of the hills which form the valleys is generally fertile, good soil covered with reeds & trees, which is burnt out when the ground is wanted to be cleared." Crook (1952:clxxviii) describes a specific garden on Nuku Hiva and writes that "the Faou [*fau*, *hau*] trees, and other wood, had been scorched round the Roots, so as to prevent them from springing again; and the space between the dead trees was filled up with Cloth plants, Kavva, Plantains, Sugar Canes, and a few breadfruit, which seemed to grow very well."

Crook suggests that fire was not just for preparing ground for planting. He (1952:clxxiv) writes that the secondary ridges separating the valleys of Taioha'e were "barren ... [and] only covered with burned Grass or Reeds. These are often set on fire, toward the lower part of the ridge, from whence the flame naturally spreads to the higher Ground."

#### *Semi-feral famine reserves?*

A passage from Crook suggests the possibility of semi-feral stands planted in uplands and held as famine reserves. Crook (1952:clxxvi) describes, in the mountains on northwestern Nuku Hiva between To'ovi'i and Henua Ataha, "Inferior ridges branch off from both sides of the Mountain in this quarter, and the descent from them, into the Vallies [sic] which separate them, though very steep, is covered with Plantains and Tarro."

#### *Coconut nurseries*

Porter (1970:51) indicates a method of coconut propagation – "the shell is buried in the ground, and a small enclosure of

stones is made round it to prevent the hogs from rooting it up."

#### IMPLEMENTS AND TOOLS

Fleurieu notes the use of stone adzes:

"[1791] Their hatchet is black and hard stone, somewhat similar to that which we call touch-stone, of which has the property; it is shaped like an elongated wedge, or rather like a mortise-chisel; and by several close turns of small sennit made of cocoa-nut bass, it is strongly fastened on the extremity of one of the branches of a piece of crooked wood: its shape is that of one of our short-handled pick-axes; and some of these tools weigh as much as twenty-five pounds." (Fleurieu 1801:121)

Krusenstern inferred that Marquesans preferred iron adzes to stone:

"[1804] Their tools are extremely simple, and consist of a pointed stone to bore holes with, and an axe made of a flat black stone. This latter they never use but in the total absence of all European tools; for the smallest piece of iron that they received from us, they instantly fastened to a handle, after sharpening the edge of it. I have, however seen a stone axe made use of in the construction of a canoe." (Krusenstern 1813:162)

Porter (1970:122) relates the opposite:

"[1813] Before the introduction of iron, sharks' teeth were used for saws, and a kind of stone adze supplied the place of the iron *tokay* [*toki*], and indeed, the attachment for the stone tools is now so great, that many prefer them to iron, I have frequently seen them throw aside a hatchet, and make use of a sharp stone to cut down small trees, sharpen stakes, &c."

But Thomson, around 1840, does not mention stone adzes:

"A few more are workmen, who make canoes, bowls, nets, etc. Every man makes his own house. They use their piece of iron with which they work whether it be a chisel, piece of iron hoop, an old knife, or whatever it may be, in the manner of an adze, secured to a crooked handle by a piece of string, formed of the husk of the cocoanut or the inner bark of the hibiscus tree." (Craig 1980:27)

Porter (1970:118) writes, "Agricultural implements consist only of sharp stakes for digging the ground...." Robarts



(1974:74), while visiting a valley on Hiva Oa, was served "great quantities of food" including a hog that "... was cut up with a piece of bamboo." Gracia (1843:49) mentions that bamboo razors were used for shaving the men's heads.

*This first part of David Addison's study of Marquesan agriculture will be followed, in subsequent issues, by Part II (Cultivation and processing of specific agricultural products); Part III (Land ownership/labor, etc.); and Part IV (Marquesan food resources).*

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